

## Enhanced Hotel Management Information System for Multiple Reservation Booking

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**[Abstract]** Hotel management system research has reached its peak with thousands of developed commercial and private software programs, which are available in the market and are currently in use across the world. Despite all the advancements, most hotel management software is far from being perfect in satisfying diverse users' needs in the aspect of multiple reservations with breaks in check-in and check-out. This limitation affects users who desire to check in at a particular period and check out, then later check in again at the same hotel. Analysis of the topmost online hotels showed that multiple reservations are yet to be accommodated by most hotel management software. This research paper, therefore, presents a novel, modified hotel management system architecture that seeks to enhance existing hotel management systems to accommodate breaks in checking in and out within a given timeframe.

**[Keywords]** Enhanced hospitality software; hotel management system; information system; multiple reservation booking

### Introduction

Hotels are examples of the hospitality industry, where the needs of the anticipated customer are satisfied with the best service; this is, achieved by supplying goods and services in size and superiority as preferred by the customer and at a price that is okay to him for the purchase of the product (Stringer 1981; Tideman, 1983; Brotherton & Wood, 2007; Wood, 2004).

There are many present and continuing influences on the design, construction, and operation of a hotel to sustain customers and make a profit (Barrows, Powers & Reynolds, 2012). Such influences includes technology, value awareness, diversity, safety concerns, and so on. To gain competence, hotels have to understand how systems and programs are used to solve problems and, thus, they have to use technologies to attain the goals of the hotel business (Boyett, Henson, & Spirgi-Hebert, 2001).

Globally, hotels are fast adopting automation for information processing and management in all their operations, such as reservations, payments, ordering food and drink, staff management attendance, inventory, and audits. This has necessitated the design and implementation of hotel information systems, which has proliferated the software market greatly in either web (distributed) or desktop (stand alone) form (Rutherford & O'Fallon, 2007; O'Fallon & Rutherford, 2011). The design of web or desktop systems has received attention from industry and academia researching the development of management systems for hotels.

The desktop version lacks the distributed capability that allows customers to reserve rooms at their convenience, though, desktop systems are more efficient and secure for all operation handled by operating personnel. The web version is an enhanced desktop version that integrates distributed capability, which makes the system accessible to prospective customers and staff at any time or place to carry out various authorized operations. These technological developments have made it possible for prospective customers to reserve accommodations and order meals ahead of their arrival, as well as make payments online (Stringer, 1981).

Despite all these advancements, hotel management systems are still rigid in accommodating reservations with breaks between check-in, check-out, re-check-in and check-out. Hence, the need to correct this problem has become eminent and necessitated the development of an enhanced model for integrating a flexible reservation capability that will greatly enhance the multiple bookings capability of

hotel management/reservation systems. Therefore, the following questions were examined: 1) How is customer satisfaction affected by the flexible online hotel reservation model? 2) How does the time spent for multiple booking enhance customer satisfaction? The paper's objectives were as follows: 1) to evaluate customer's satisfaction in the flexible online hotel reservation model; 2) to examine how the time spent on flexible multiple reservation booking enhances customer satisfaction.

### Related Works

#### *Overview of Online Hotel Management System*

An in-depth literature review on various hotel management information systems was carried out. The details of hotel management system components were elicited, and the research and structural element in the design was discussed. Ivanov and Zhechev, (2012) worked on hotel revenue management systems and the details of hotels' revenue management system component were discussed; the structural element in the design was, also, shown.

Delizo and Esguerra (2013) designed and implemented an online hotel reservation and management system for the college of international tourism and hospitality management. Though, the reservation was automated, as shown in their reservation model, it lacks the flexibility to accommodate multiple reservations with breaks, such as check-in/check-out and re-check-in/check-out. Thus, the customer will have all bookings in a single reservation instead of in multiple, individual reservations.

Rahim, Hosain, Islam, Anjum, and Rana (2011) designed an intelligent hotel management system that seeks to automate hotel customers' interaction with hotel facilities in a zero touch using voice processing. The model incorporated the automatic control of lighting, cooling, and so on. Unfortunately, the reservation module of the system was still the same rigid module that is found in all available hotel reservation systems. Once again, the model lacks the flexibility to accommodate multiple reservations with breaks in between a check-in/check-out and re-check-in/check-out pattern.

#### *Reservation Module of Hotel Management System*

The typical reservation module of any hotel reservation system, as pictured in Figure 1, only allows a prospective customer to select a check-in date and check-out date with optional payments methods and order for food and other items needed during the stay.

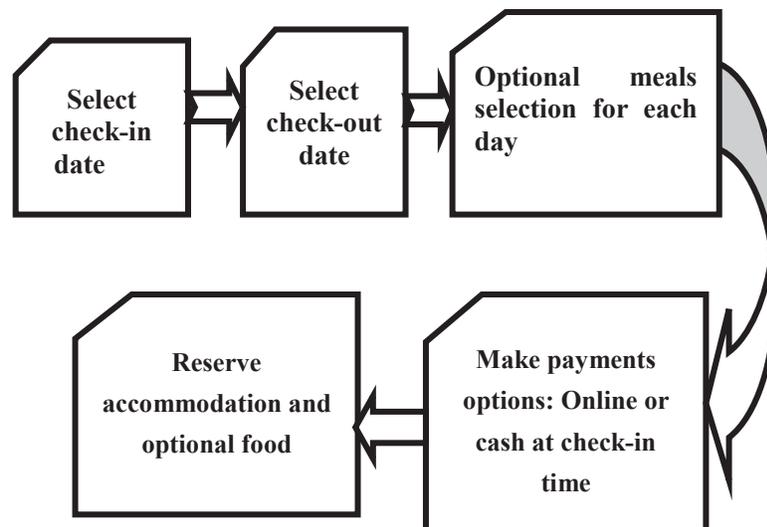


Figure 1. Existing Reservation module of Hotel Management System

### Problem Formulation

When prospective customers have multiple check-in, checkout, and re-check-in and check-out again visits on the same hotel website, it is difficult for customers to fill one reservation form that will accommodate the multiple dates. In other words, such customers will be checking in for a period of time, then check-out, and later recheck-in again for another time frame. The proposed Enhanced Hotel Management Information System (EHMIS) for Multiple Reservation Bookings is shown to perform such a task. Also, the existing reservation model cannot accommodate this kind of booking that accepts multiple entries into one reservation form instead of multiple reservations for multiple check-in and checkout actions. Is there a way that a hotel management model can accommodate multiple check-in and check-out actions by filing one reservation form? Is there possibility of maintaining same room for customer's next visit? Yes--the EHMIS is proven to perform such task

### Research Framework

#### *Analysis of the Existing Online Hotel.com*

An in-depth literature review of existing hotel websites showed that the module responsible for multiple reservations was not incorporated into the existing hotel.com model. Thus, a customer that intends to keep a particular room for another time within a defined time frame will not be able to have such a privilege, unlike manual hotel registration systems that allow such privileges.

#### *Enhanced Hotel Management /Reservation Model*

In this proposed enhanced model for a hotel management system reservation module, prospective customers can select multiple check-in and check-out actions on a single reservation. It accommodates customers with straight reservation check-in and check-out dates without any break, and it accommodates customers who have multiple check-in and check-out actions; it will do this on a single reservation form. In other words, the proposed system accommodates customers with straight reservation check-in and check-out dates without any break, and customer reservations with multiple check-in and checkout dates/actions. In the proposed model, there is a loop in the checkout date component that uses a conditional statement to either proceed to the optional meal selection task or to return to select further check-in dates/actions.

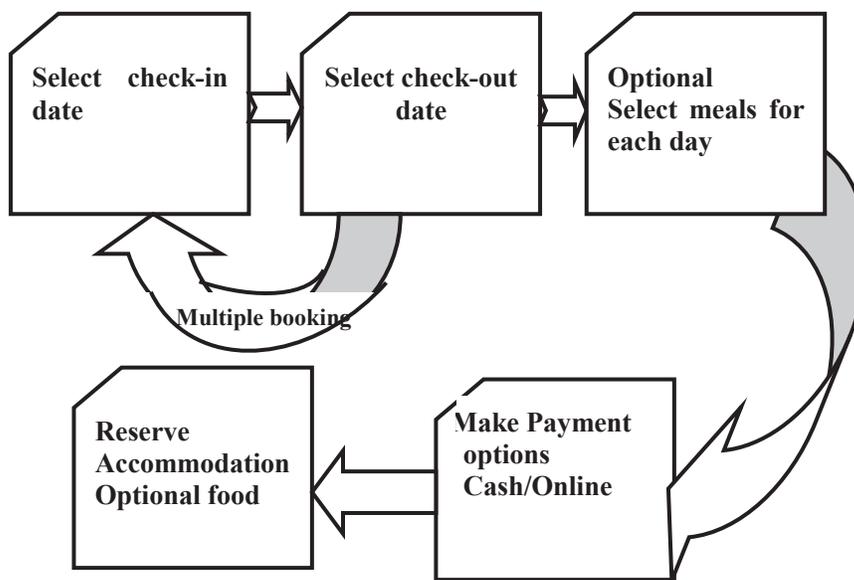


Figure 2. Enhanced hotel management system reservation model

### **Survey of Top Fifties World Best Hotels Reservation**

Table 1 shows the fifty online hotels that were checked for multiple bookings on one reservation. The survey presented in the Table1 is rated with 0 and 1, indicating inclusion of multiple booking functionalities and non-support of multiple booking, respectively. Table 1 shows that all hotel reservation modules do not support flexible booking that enables check-in and check-out booking with different dates on one reservation form. It can also be inferred from Table 1 that world class hotels in the United States, Italy, and others that did not observe this design flaw in the online hotel model despite the fact that all these countries are well known for computer technological advancements. Table1 shows that there is no online hotel management model that accommodates multiple bookings on one reservation form.

Table 1. Survey of Top Fifties World Best Hotels Reservation Modules

S/N	Hotel Name	Strict Straight Reservation	Multiple Reservation
1	Amani Hotel	1	0
2	Auberge Du Soleil	1	0
3	Baur Au Lac	1	0
4	Bellagio	1	0
5	Belmond Charleston Place	1	0
6	Belmond Copacabana Palace	1	0
7	Belmond Copacabana Palace		0
8	Carlton Hotel Baglioni	1	0
9	Ciragan Palace Kempinski	1	0
10	Claridge's	1	0
11	Clift  San Francisco	1	0
12	Condado Plaza Hilton	1	0
13	Dukes Hotel	1	0
14	Emiliano	1	0
15	Excelsior Palace Hotel Rapallo	1	0
16	Fairmont Le Chateau	1	0
17	Fifteen Beaconboston,	1	0
18	Four Seasons Hotel George V Paris	1	0
19	Four Seasons Safari Lodge Serengeti	1	0
20	Grand Hotel Villa Serbelloni	1	0
21	Hotel Danieli	1	0
22	Hotel Vier Jahreszeiten Kempinski Munich	1	0
23	Inn Of The Anasazi	1	0
24	Langham Hong Kong	1	0
25	Le Palais De La Mediterranee	1	0
26	Le Saint-Sulpice	1	0
27	Luna Hotel Baglioni	1	0
28	Majestic Hotel And Spa Barcelona	1	0
29	Mokara Hotel And Spa San Antonio	1	0
30	Nobis Hotel Stockholm	1	0
31	Ritz Carlton	1	0
32	Rustic Inn Creekside Resort And Spa	1	0
33	Sandy Lane Hotel	1	0
34	Shangri-La Barr Al Jissah Resort And Spa	1	0
35	Shangri-La Hotel Sydney	1	0
36	Shangri-La's Villingili Resort And Spa	1	0
37	Taj Cape Town	1	0
38	The Carlyle, A Rosewood Hotel	1	0
39	The King David, Jerusalem	1	0
40	The Mansion On Forsyth	1	0
41	The Mayflower Grace	1	0
42	The Regent Palms	1	0
43	The Resort At Pedregal	1	0
44	The Table Bay At The Waterfront	1	0
45	The Westbury Hotel Dublin	1	0
46	Trout Point Lodge Of Nova Scotia	1	0
47	Trump International Hotel And Tower Chicago	1	0
48	Viceroy Bali	1	0
49	Villa D'este	1	0
50	Villa La Massa	1	0

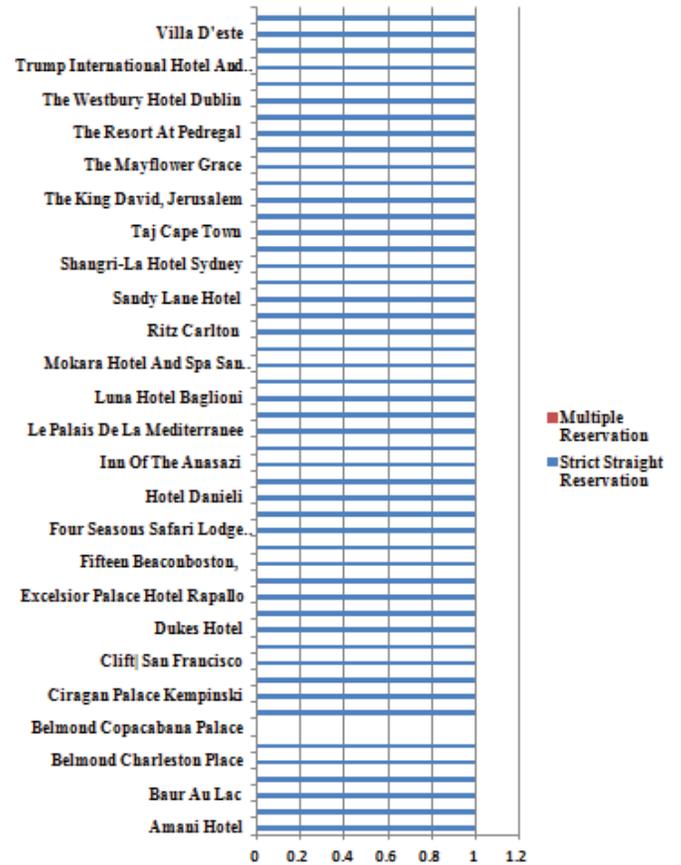


Figure 3. Analysis of the Survey of existing hotels

### Evaluating the Acceptability of the Enhanced Hotel Management Model

In evaluating the acceptability of the proposed enhanced hotel management model, an online questionnaire was administered to those who attend conferences in different countries. The findings in Table 2 shows that customers in a hotel do not have the opportunity to check out of the hotel, test another hotel, and then return to the original hotel if the tested one does not meet the expected standard. Customers are not able to choose the same room for their next hotel booking. However, the new enhanced hotel model has the flexibility for a customer to retain a particular room and fill only one reservation form while making multiple bookings.

Table 2. A performance evaluation of the enhanced Hotel management model with the existing Hotel Model

Capability	Existing Model	Enhanced Model
1) I can book my reservation online	Yes	Yes
2) It is possible to make one reservation	Yes	Yes
3) Capable of allowing one reservation for multiple booking	No	Yes
4) Filling of one reservation form for multiple booking saves time	Not Applicable	Yes
5) It gives me the opportunity of keeping a particular room on my next visit	No	Yes
6) Maintaining a room of choice for my next visit gives me satisfaction	Not applicable	Yes

The average mean responses of the respondents to each question are shown in Figure 4. The mean values were computed from the average of each respondent's response to each question. Figure 4 shows that both models have the capability of making one online reservation per customer. However, the existing model lacks the capability of making one reservation for multiple bookings and does not give the customer the opportunity to maintain a choice room.

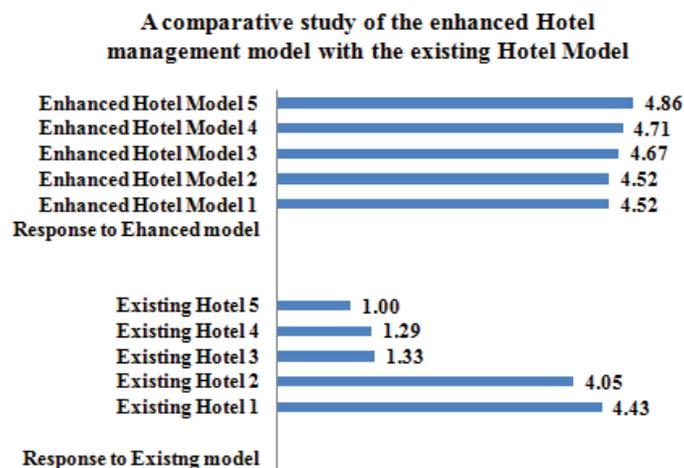


Figure 4. Comparative analysis of the enhanced Hotel management model with the existing Hotel Model

Furthermore, Figure 5 shows the impact of the proposed model on satisfying customers. Most of the respondents agreed that customer's satisfaction can be enhanced if hotel models accommodate multiple bookings on one reservation form.

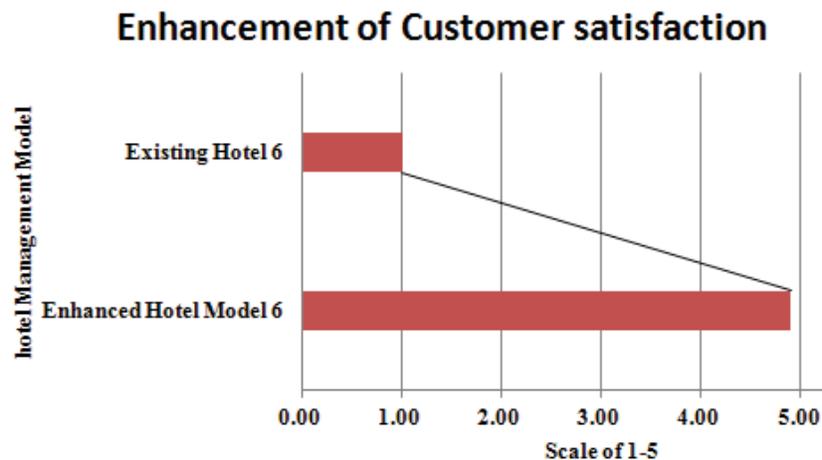


Figure 5. Comparative analysis of customer satisfaction in using enhanced Hotel management model

### Discussion and Conclusion

The addition of a conditional statement to the check-out component of online hotel reservation model provides the ability that accommodates multiple bookings in one reservation form. Also, the additional conditional statement, which forms a loop between the check-in and check-out components, will help the customer reserve a choice room for the next visit. Time wasted in filling multiple reservation forms due to multiple check-in and check-out will be mitigated. In this study, the proposed enhanced hotel management model has been shown to have the ability to accommodate multiple check-ins and check-outs. This additional module has also shown enhancement of customer satisfaction. Moreover, further research can be carried out from these findings; the Internet community needs to attend to the design flaw in the current model to immediately remediate the current system.

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